J.A. Trevor-Hawsley

WALKER - ANDREWS REHABILITATION RUG LOOM MARK II

By MARGARET WALKER, M.A.O.T.

WALKER-ANDREWS
REHABILITATION RUG LOOM
MARK II

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ACKNOWLEDGEMENTS

I would like to thank the Nottingham Handcraft Company for asking me to write this booklet. Having completed this task, I am thoroughly convinced that weaving is still a most useful craft in many Departments, especially with a loom specifically designed for our work.

The original Walker - Andrews Rug Loom has now been considerably modified in the light of experience gained from practical use, and these modifications have greatly improved its therapeutic value.

I would like to thank my colleagues at Lodge Moor Hospital, Sheffield, for their help and advice in writing this booklet and also those patients who assisted me in testing the loom. I hope that other Occupational Therapists will find this booklet of interest and assistance.

Margaret Walker, M.A.O.T.

WALKER-ANDREWS REHABILITATION RUG LOOM MARK II

INTRODUCTION

The Walker-Andrews Rehabilitation Rug Loom is basically a conventional rug loom to which essential modifications have been made to ensure maximum use from a therapeutic point of view. The dimensions are unchanged from the previous model except for the height, which has been increased slightly to give a longer range of movement to the beater. The loom as a whole has been slightly tilted forward, bringing the front into a more vertical line, which improves the exercise obtained and reduces the tendency of the loom to move steadily away from the weaver.

Main Features

1. Resistance to beating can be applied to either the "up" or "down" movement, thus increasing the scope of its remedial value.
2. The point of pivot of the beater has been lowered, hence doubling the distance through which the reed travels. This has resulted, firstly in the range of movement being doubled, whilst secondly, a longer piece of weaving may be completed before it is necessary to roll on the warp; this additional weaving may be carried out, although still maintaining a reasonable range of exercise, a good tension on the warp and an adequate shed.
3. A heddle mechanism is incorporated to maintain the shed during weaving, however short the exposed warp. This improves the standard of the patient's weaving, and the possibility of making mistakes is reduced; instead of the shed slowly closing itself whilst the patient struggles to throw the shuttle—a fault of the previous model—the heddle frames are now held firmly in position.
4. A locking mechanism on each end of the beater holds it securely up in position, however great the resistance during weaving. This is an improvement on the earlier model, which had only one catch in the centre of the beater.
5. Four weights are supplied with the loom, namely $2\frac{1}{2}$, 5, 10 and 15 lbs. It is therefore possible to vary the resistance from 0 to $32\frac{1}{2}$ lbs. The bar weights are positioned either above or below the beater and held in place by bolts and wing nuts. Should all the weights be required both positions must be used. Posts have been situated at the rear of the loom for storage purposes.
6. Foot pedals are supplied should the loom be required for use in a conventional manner. They are used in the normal way in place of the heddle mechanism changing the shed, although it will still be necessary to release the heddles for every shed. Loom cord is supplied and the pedals are tied up normally in the required positions.

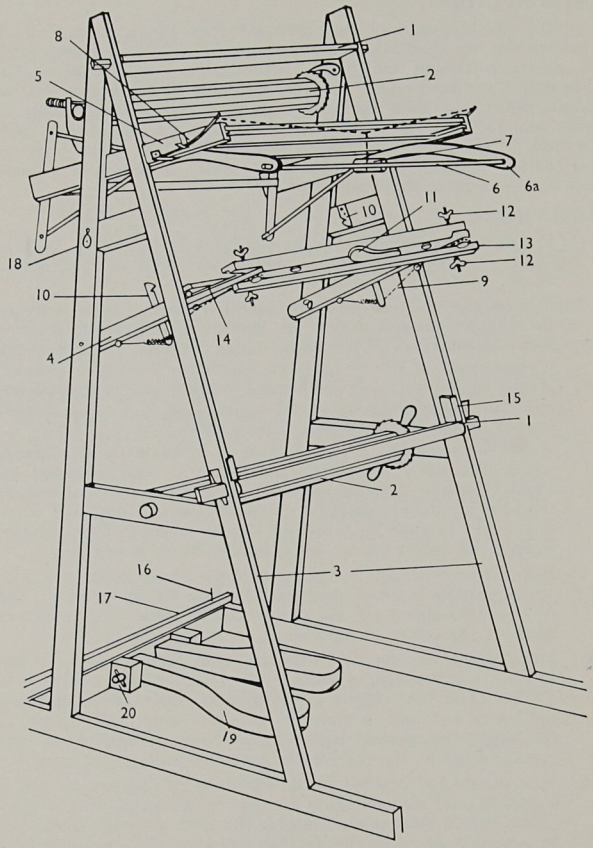

Plate 1

No.	Description
1.	Cloth Bars
2.	Rollers
3.	Loom Side Frames
4.	Batten/Beater
5.	Heddle Guide Frame
6.	Shed Changing Bar
6a.	Heddle Extension
7.	Heddle Mechanism Release Toggle
8.	Heddle Mechanism Lever Arm
9.	Beater Mechanism
10.	Beater Mechanism Catch
11.	Beater Mechanism Release
12.	Attach Weights here
13.	Weight
14.	Reed
15.	Beater Stop
16.	Weight Storage Posts
17.	Spare Weights
18.	Position of Pulley
19.	Foot Pedals
20.	Pedal Bar

ASSEMBLY AND MAINTENANCE

To Assemble the Loom

Remove all contents of the crate and check that all pieces are present, then lay them out with reference to Plate A in the order they will be required :—

Right hand side frame; 2 cloth bars; rear pedal bar; 3 wedges; bottom roller; heddle movement; 3 wedges; beater; top roller; pedals, loom card; weights; 2 shed sticks; 12 warp sticks; 2 stick shuttles.

It is simpler if two people are able to assemble the loom together; however, it is possible to do the job single-handed. A mallet and a block of wood should be used for tapping the wedges into position. Some of the parts are labelled :— A,A., B,B., etc., and where this is so it will help to avoid confusion in assembling if these are matched.

1. Take the right-hand side frame and lean it upright against the wall, with space on either side. (Outerside facing the wall).
2. Insert both cloth bars into the front upright, noting that rounded edges face the front (match letters), then insert rear pedal bar into the lower frame member. Tap in 3 wedges to hold secure.
3. Place ratchet end of bottom roller in position (metal catch should be **up**), attach handle.
4. Tap left-hand side frame into position to within $\frac{3}{4}''$.
5. Stand behind the loom holding the heddle movement, the two heddle frames on top of each other, with the shed changing bar at the bottom. Pass the heddle movement between the two side frames. Locate the two copper pegs into the copper lined holes in the heddle guides. It will now be necessary to tap the second side frame further into position and almost home before the heddle frames can be situated from the front in the heddle guides.
6. Tap side frames home and secure with last 3 wedges.
7. Again, stand behind the loom, holding the beater and pass this between the side frames. The beater pivots on a bolt at each end. The bolts are now inserted in this order :—
   Side frame; washer; beater; washer; wing nut.
   Push beater up into top position and adjust the beater release mechanism. Make sure the cord is round the pulleys as shown in plates 2 and 2A. It is important to adjust the tension so that it is equal at both ends with no slack when at rest, but not so tight that the hooks are pulled out of contact.
8. Drop the top roller into position and insert the pegs to secure it; attach handle.
9. Attach the pedals. The pivoting bar is assembled as follows :—
   Through block on pedal bar; one pedal; square block; second pedal; block on pedal bar.
   Insert peg supplied. If pedals are to be used, tie in position on heddle movement with loom card supplied.

10. Tie up heddle release mechanism. The toggle should hang as high as possible and centrally. The cord at each end passes over the pulleys. (It should not be so tight that the pegs are pulled back when at rest).

11. Weights fit on peg on rear pedal bar when not in use. The loom is now ready for use.

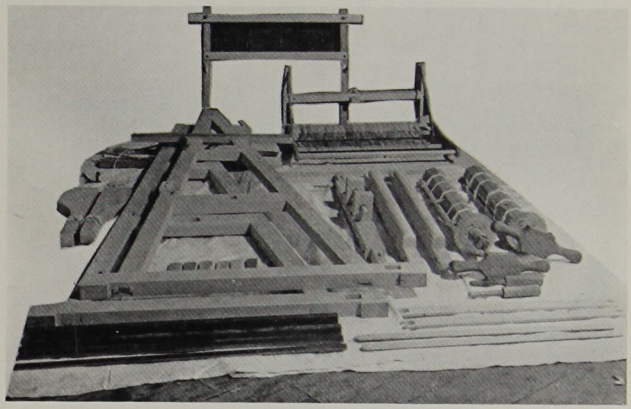

Plate A

2 side frames with heddle guides and heddle release mechanism attached
2 bolts for beater arms
2 pedals with loom cord
6 wedges
4 bar weights
2½ lb 5 lb 10 lb 15 lb

Beater (reed not shown)
Heddle movement
From 1 to r–
1 rear pedal bar
2 cloth bars
2 rollers with ratchet wheels and warp sticks
2 handles and 2 pegs for rollers
2 stick shuttles
2 shed sticks
12 warp sticks (not shown)

MAINTENANCE

If the heddle movement is stiff, a little soap applied to the ends of the heddle frames and inside the guides will help. A regular spot of oil on the pulleys will make for freer movement.

It is important that the tension on the cords should be adjusted regularly to take up any stretch and the cords should be checked for wear and replaced to avoid accidents.

SPECIFICATION

Height 7′ 2″ Depth 3′ 6″
Width 3′ 6″ (weaving width from 27″)
Net Weight 140lbs. approx.

BEATER MECHANISM

On each end of the beater there is a metal hook (Part 10) with a corresponding hook on the side frame; these click together when the beater is raised to the highest position, thus securely holding it up until it is manually released. To lower the beater, the release knob (Part 11) is pushed in, thus releasing the two hooks. When pressure is removed from the release knob, the bottom hook returns to the correct position ready for contact with the top hook when the beater is raised. It is important that equal tension is maintained at both ends of the mechanism, otherwise one end will tend to be released before the other, thus putting unnecessary strain on the beater; this particularly applies if all the weights are on. The tension should be correctly adjusted when the loom is assembled and later, as and when required. The best place to make the adjustment is where the flexible cord joins the bottom of the hook. (See Plates 2 and 2A).

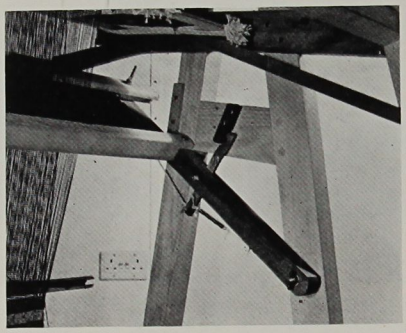

Plate 2

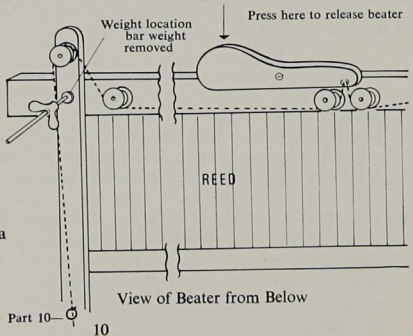

Plate 2a

View of Beater from Below

Part 10—

BEATER MODIFICATION

The standard Walker-Andrews Loom Mark II is not supplied with a resistance applied to the down beat. However, the beater is now made longer at each end to allow sufficient clearance for the additional rope and weight.

All that is required is a cup hook to be screwed into the beater and one into the loom side frame to take a pulley (see Plate 3). The ropes and weights, such as lead shot or sandbags, which are probably already in use in the Department, will be quite satisfactory.

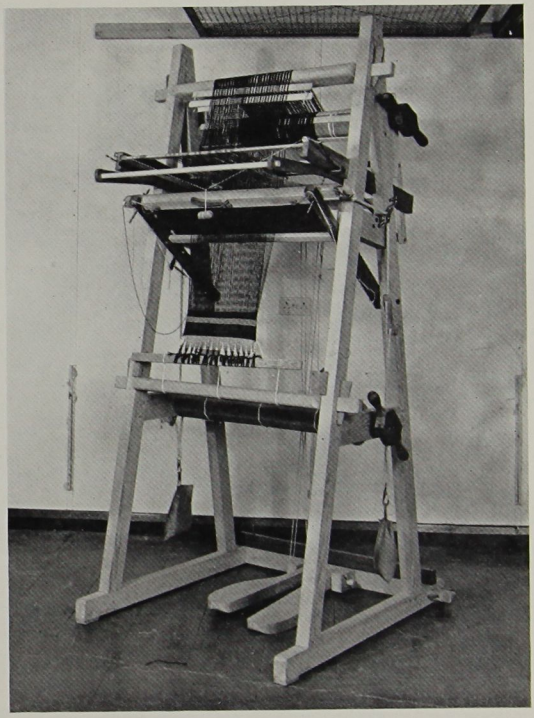

Plate 3

HEDDLE MECHANISM

This consists of a spring loaded bar which shoots into one of two holes in the heddle extension (Part 6a), which is attached to the bottom of the heddle frame (Part 5); it is according to the shed, whether the bottom heddle frame is in the front or rear position. When pulling the release toggle, it moves the lever arm (Part 8) which draws the rod back and frees the heddle frame. As soon as the mechanism is allowed to relax, the spring pushes the rod through into a locating hole. The mechanism is repeated on both sides of the heddle guide.

When weaving, it is necessary to pull the release toggle with one hand while the other grasps the shed changing bar (Part 6) and either push or pull alternately, according to the shed required. Obviously this is a definite bilateral movement. (See Plate 4).

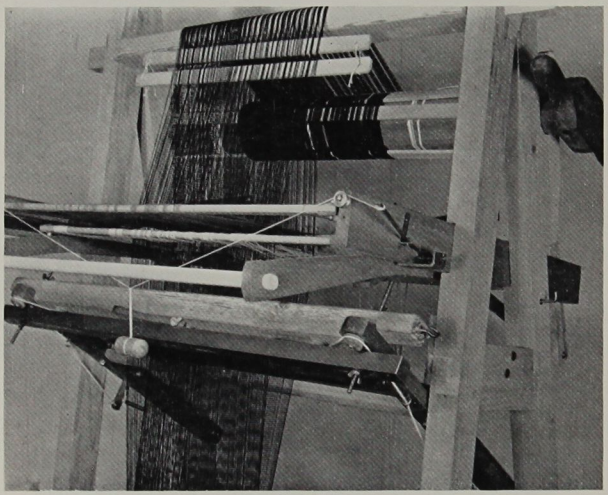

Plate 4

WEAVING PROCEDURE

1. Release heddle mechanism and push shed changing bar in for first shed.
2. Throw the shuttle.
3. Release the beater and beat.
4. Return the beater to the "Up" position.
5. Release heddle mechansim and pull shed changing bar out for second shed.

SCOPE OF WORK

Despite the current trend to find our exercise in industrial activities rather than in traditional crafts, there still are many patients who enjoy weaving. The rug loom can be used progressively throughout a patient's treatment. However, it is doubtful if even the most ardent would relish six months of rug production. Why not, therefore, use the loom for other types of weaving than rugs? In addition to the usual reed supplied with the rug loom, namely a 6 dentage, various dentage reeds are also available.

One point to bear in mind is that one cannot have a weight of 30lbs. crashing down onto a fine cotton weft. This can be overcome by progressing the weaving as well as the exercise; initially when no resistance is required, fine work can be done, e.g., a stole or cushion cover; this can be followed by towelling, or bath mats using nytrim, and then arriving at rugs by the time maximum resistance is required.

THERAPEUTIC VALUE

Therapeutic Application

The main therapeutic value of this piece of equipment is for the shoulder girdle, although it is also a useful form of treatment for spinal injuries and elbows.

Conditions which affect the shoulder girdle—(trauma, degenerative conditions and postural defects)—involve not only the gleno-humeral joint and its movements, but also those of the scapula, as these are closely associated. Similarly injuries to the arm and forearm will also affect the shoulder girdle because of the position of immobilization. Flexion of the gleno-humeral joint is allied to protraction and lateral rotation of the scapula, and beyond 90°, lateral rotation of the humerus. Extension of the gleno-humeral joint is allied to retraction and medial rotation of the scapula, with some medial rotation of the humerus. All these movements are used in the normal functioning of the hand and arm, and it is therefore essential that they should be re-educated. When using the rug loom, all these movements come into play, plus shoulder abduction (particularly in throwing the shuttle), spinal extension, and elbow extension and flexion. The main exercise is to be found in beating, and depending on the disability, resistance can be added to whichever movement is desired, or to both alternately.

Up Beat

Provides exercise for protractors and lateral rotators of the gleno-humeral joints, elbow extensors and spinal extensors.

Muscles involved:

Serratus anterior	Trapezius
Deltoid	Supraspinatus
Infraspinatus	Pectoralis major and minor
Coroco-brachialis	Triceps
Anconeus	Spinal Extensors

plus:

Wrist Flexors and Extensors and Postural Muscles

Down Beat

Provides exercise for retractors and medial rotators of the scapula, extensors and medial rotators of the gleno-humeral joint, elbow flexors, abdominals and finger flexors.

Muscles involved :

Pectoralis major	Finger flexors
Deltoid	Latissimus dorsi
Teres major	Rhomboids
Brachio-radialis	Brachialis
Abdominals	Wrist extensors

plus:

Subscapularis	Biceps
Triceps	Postural muscles
Long forearm muscles	

A better exercise in a wider range is obtained if the hands are placed towards the ends of the beater rather than towards the centre.

Some suitable conditions

1. Injuries around the shoulder joint :—
   a) Fractures of the Clavicle, Scapula, upper third of Humerus
   b) Dislocation of shoulder.
2. Injuries around the elbow joint :—
   a) Fractures of lower third of Humerus, Olecranon, head of Radius, shaft of Humerus.
3. Stiff shoulder :— frozen shoulder; hemiplegia.
4. Postural defects.
5. Thoracoplasty, chest conditions.
6. Prolapsed Intervertebral Disc and fractured vertebrae (without cord lesion).
7. Brachial plexus lesions and Peripheral nerve injuries, e.g. Circumflex, Musculo-cutaneous, Radial nerve (late stage).
8. Poliomyelitis, Peripheral Neuritis.
9. Spinal injuries.

Work on the rug loom can be very strenuous and should be graded with care; it is important that the therapist, by using it herself, is thoroughly familiar with the loom and its possibilities before treating a patient. The decision concerning which movement to use in any particular case, must be taken by the therapist in the light of her knowledge regarding operative procedures, position of immobilisation used, and the patient's disability and stage of recovery.

It is important that the patient should start in a good position, tucked well under the loom, and the back well supported. It is advisable to bolt the loom to the floor if possible, and the use of the Camden Multi-Purpose Stool is recommended or, if not available, some other adjustable seat. For a very tall patient the loom can be raised even higher on blocks for maximum stretch, or the small patient can use a raised seat.

PROGRESS CHART — RUG LOOM

NAME..... DIAGNOSIS.....

DATE	RESISTANCE	BEAT UP/DOWN	SEAT HEIGHT

OTHER PUBLICATIONS

The Oliver Rehabilitation Machine
by Edward R. Oliver, M.A.O.T. 4/6d

The Farnham Rehabilitation Lathe
by Wenona Keane, M.A.O.T. 4/6d

The Thame Wire Twisting Machine
by Pamela Everett, M.A.O.T., M.C.S.P. 4/6d

The Ankle Rotator Machine
by Alice E. Savage, M.A.O.T. 4/6d

The Fletcher-Wiltshire Orthopaedic Bed Loom
by Marti Baumann, A.S.B. 4/6d

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